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26. OBSERVATIONS ON INDIAN TRABUTININI SILVESTRI AND PHENACOCCINI SULC (PSEUDOCOCCINAE: PSEUDOCOCCIDAE: HOMOPTERA)

The present study deals with the observations on 6 species representing 6 genera belonging to the tribes Trabutinini and Phenacoccini in India. The two tribes are distinctly separated from each other by the following key characters:

1. Quinquelocular pores and dentate claws entirely absent; body enclosed within the ovisac .... Trabutinini Silvestri
— Quinquelocular pores or dentate claws or both present; body not enclosed within the ovisac ... . Phenacoccini Sulc

Tribe TRABUTININI Silvestri

This tribe is represented by a single genus *Naiacoccus* Green from India.

Genus *Naiacoccus* Green

Ferris (1950) placed this genus in a group including the genera *Amonostherium* Morrison, *Trabutina* Marchal and *Nipaecoccus* Sulc. But Bodenheimer (1953) placed it under subfamily Trabutininae. This genus is represented by a single species from India.

Naiacoccus serpentinus Green

In the field, adult females of this species are easily recognized by the presence of an enormously elongated (about 20 mm long) white tubular ovisac in the form of a simple twisted loop within the anterior extremity of which the insect lies concealed. We have observed a heavy infestation of this species on *Tamarix articulata* at Hathras (Aligarh).

Material examined: 5 ♀, INDIA: Uttar Pradesh, Aligarh, Hathras, on *Tamarix articulata* Wall., 26.iv.1978; 8 ♀, Mathura, Farah, 5.v.1978 (*R. K. Avasthi*).

Tribe PHENACOCCINI Sulc

Koteja (1974) recognized Trabutininae as subfamily of Pseudococcidae and placed under

it the group names, Phenacoccinae Sulc, Coccurini Borchsenius, Ceroputo + Nairobia sections of Afifi, and Putoidae Beardsley. According to him "the group name Trabutininae had priority over all other names." In the present paper Phenacoccini is treated as a distinct tribe of Pseudococcinae and is represented by 6 genera from Indian region which are separated by the following key characters:

KEY TO INDIAN GENERA OF PHENACOCCINI SULC, BASED ON ADULT FEMALES

1. Dorsum without longitudinal series of prominences bearing stout conical or large truncate spines, except on cerarii 2
— Dorsum with longitudinal series of prominences, each bearing variable number of stout conical or large truncate spines which resemble with the cerarian spines (Ferris, 1954: fig. 40) .... *Coccidohystrix* Lindinger

2. Crateriform ducts absent 3
— Crateriform ducts present, each with the orifice at the apex of a sclerotized prominence and often with one or more setae attached to the base of the duct prominence (Avasthi & Shafee, 1982: fig. 1) ..... *Heliococcus* Sulc

3. Quinquelocular pores absent on dorsum; trilocular pores present throughout venter; claw with denticle; antennae 8- or 9-segmented 4
— Quinquelocular pores present on both surfaces; trilocular pores confined near spiracles only; claw without denticle antennae 6- or 7-segmented (Williams, 1970: fig. 3) .... *Brevennia* Goux

4. Cerarii anterior to anal lobe not formed upon a sclerotized plate or area..... 5
— Cerarii including anal lobe formed upon a sclerotized plate or area bearing more than 6 enlarged setae or spines (Williams, 1970: fig. 21; Ali, 1975: fig. 1) ..... *Birendracoccus* Ali

5. Most of the cerarii with 2 and few with 3-5 conical spines (Avasthi & Shafee, 1978: fig. 1) ..... *Phenacoccus* Cockerell
— All cerarii with numerous truncated spines (Ferris, 1954: fig. 41; Avasthi & Shafee, 1983: fig. 1) ..... *Rastrococcus* Ferris

Genus *Birendracoccus* Ali

Ali (1975) assigned this genus in a group of genera having all the cerarii with basal area sclerotized. The presence of numerous multilocular pores on venter of posterior abdominal segments may be an significant character for separating *Birendracoccus* from *Puto* Signoret. This genus is represented by a single species from India.

Birendracoccus saccharifolii (Green)

This species is a vector of spike disease on sugarcane (Ali 1962) and is a major pest in Bihar (Williams 1970).

Material examined: 10 ♀, INDIA: Uttar Pradesh, Aligarh, on leaf sheath of *Saccharum officinarum* Linn., 7.ix.1978 (*R. K. Avasthi*).

Genus *Brevennia* Goux

The genus is represented by a single species, *B. rehi* (Lindinger) from India. It is redescribed and illustrated by Williams (1970). It is known to us only by the descriptions of earlier workers.

Genus *Coccidohystrix* Lindinger

Only a single species has so far been included in this genus from India.

Coccidohystrix insolitus (Green)

The species is widely distributed throughout India infesting about 13 different species of plants (Ali 1970). We have observed it for the first time infesting *Solanum hispidum* and *Euphorbia pulcherrima* at Aligarh. Both nymphs and adults were usually found on undersurface of the leaves and their infestation causes serious damage to the plants.

Material examined: 2 ♀, INDIA: Bihar, Gaya, on *Achyranthus aspera* L., 25.x.1969 (*S. Adam Shafee*); 4 ♀, 10 ♂, Uttar Pradesh, Aligarh, on *Solanum melongena* L., 2.viii.1977; 3 ♀, 2 ♂, on *Solanum hispidum*, 24.x.1977; 2 ♀, 3 ♂, on *Euphorbia pulcherrima* Willd., 24.xi.1977; 6 ♀, 6 ♂, on *Abutilon indicum*, 5.xii.1977; 5 ♀, Tamil Nadu, Coimbatore, on *Abutilon indicum* and *Achyranthus aspera* L., 27.iii.1979 (*R. K. Avasthi*).

Genus *Heliococcus* Sulc

The genus *Heliococcus* (with *H. singularis* Avasthi & Shafee) was reported for the first time from India by Avasthi & Shafee (1982).

Heliococcus singularis Avasthi & Shafee

Material examined: *Holotype* ♀, INDIA: Andhra Pradesh, Prakasam, Chirala, on *Cupressus* sp., 1.iv.1979 (*R. K. Avasthi*).

Genus *Phenacoccus* Cockerell

Ali (1970) catalogued a single species *P. saccharifolii* Green from India which was later designated by him (1975) as type-species of his new genus *Birendracoccus*. Here we have assigned only a single species of Indian origin under this genus.

Phenacoccus indicus (Avasthi & Shafee), comb. nov.

Peliococcus indicus Avasthi & Shafee, 1978: 905.

The species agrees in every respect with the generic diagnosis given by Ferris (1950), McKenzie (1962), Williams (1970) for the genus *Phenacoccus*. The absence of clusters of multilocular pores each with one or more slender tubular ducts near the centre separate it from the genus *Peliococcus* Borchsenius. Therefore, *P. indicus* is transferred to the genus *Phenacoccus*.

Material examined: *Holotype* ♀, *Paratypes* 4 ♀ INDIA: Mysore, Bangalore, Hebbal, on *Prosopis spicigera* L., 29.vi.1968 (*S. A. Shafee*).

Genus *Rastrococcus* Ferris

The genus is represented by four species *R. cappariae* Avasthi & Shafee, *R. iceryoides* (Green), *R. mangiferae* (Green) and *R. ornatus* (Green) from India. The later two species were included in *Rastrococcus* by Ferris (1954) who was of the opinion that the generic diagnosis applies only to the type-species of the genus whereas the other species referred to this genus here have some peculiar characters which need either naming of a new genus or their inclusion in a single genus which is definable with difficulty. However, the absence of dentate claw separate these two from the genus *Rastrococcus* Ferris.

Rastrococcus cappariae Avasthi & Shafee

R. cappariae Avasthi & Shafee, 1983: 103.

Material examined: *Holotype* ♀ *Paratypes* 5 ♀, INDIA: Uttar Pradesh, Aligarh, Naqvi Park, on *Capparis sepiaria* Wall., 2.vi.1977; 4 ♀, Bulandshahar, Danwar, on *Mangifera indica* Linn., 12.vi.1977; 10 ♀, Tamil Nadu, Coimbatore, on *Acacia maniliformis, Ceiba pentandra* and *Capparis sepiaria* Wall., 27.iii.1979 (*R. K. Avasthi*).

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27. STUDIES ON THE BIOLOGY OF *PARNARA NASO* FABR. (LEPIDOPTERA: HESPERIIDAE)

The rice skipper feeds on the rice leaves and occurs throughout the rice growing tract. Rao *et al.* (1970) recorded it in nurseries and planted crops causing varying amounts of damage. *Baoris guttatus* Bada (*Parnara naso bada* M.) was recorded by Kulshreshtha *et al.* (1973) as causing damage to growing rice. Though a large number of references on the occurrence and biology of *Parnara* sp. on rice are available, information on the habits and biology of *P. naso* is scanty. Hence, a detailed study of the biology, larval habits and the common larval parasites was undertaken.

MATERIALS AND METHODS

Females of *P. naso* were collected from rice fields and released in glass chimneys on potted rice plants for egg laying. After hatching of the eggs the larvae were transferred to cut rice